

AHMAD SINJARI
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SUMMARY

I completed my PhD in Electrical Engineering in 2010 in the area MEMS. In my PhD work I developed a new MEMS based radar sensor that can be used in a collision avoidance system for vehicles. The University of Windsor filed for 4 US patents on behalf of me. Toyota and Magna showed interest in the MEMS chip and we had several meetings explaining to them the technology and its advantage over existing systems. Prior to joining the PhD program in Windsor I have worked in automotive industry for more than 20 years in the areas of PLC (Rockwell automation and Siemens) and robotics (Fanuc, ABB, KUKA, Motoman and Kawasaki).

EDUCATION

Ph.D. in Electrical and Computer Engineering University of Windsor, Ontario 2006-2010
(A MEMS Based Radar Sensor for Automotive Collision Avoidance)

Research sponsors:

- Ontario centres of Excellence (OCE)
- Auto 21

Master of Science in Electrical Engineering University of Toronto (CES) 1990-1992
Bachelor of Science in Electrical Engineering University of Toronto (CES) 1982-1987

PATENTS and PUBLICATIONS

Patents:

1. 4 US patents, filed in the United States Patents and Trademark Office. (US 61/282,595, March 5, 2010)

Publications:

1. A. Khalid Ahmed, S. Yaseen Ezdeen, and A. M. Sinjari, "Design of a New Modular Reconfigurable Gripper," *TEM J.*, vol. 11, no. 2, pp. 763–771, May 2022, doi: 10.18421/TEM112-33.
2. A. K. Ahmed, S. Y. Ezdeen, and A. M. Sinjari, "Analyzing the Stress and Modal Behavior of a Reconfigurable Gripper's Finger with Different Fabrication Materials," *Int.*

- J. Mech. Eng. Robot. Res.*, vol. 11, no. 11, pp. 820–833, 2022, doi: 10.18178/ijmerr.11.11.820-833.
3. A. K. Ahmed, S. Y. Ezdeen, and A. M. Sinjari, “Review, The Re-Configurable Robotic Gripper Design, Dynamics, and Control,” *Int. J. Robot. Res. Dev.*, vol. 11, no. 2, pp. 19–38, 2021, doi: 10.24247/ijrrddec20212.
 4. KAREEM, B. A. & SINJARI, A. 2023. The Influence of Temporal Logic on Finite Automata. *Al-Rafidain Engineering Journal (AREJ)*, 28, 230-238.
 5. Asaad Saber, Ahmad Sinjari “Design and implementation of Evaporative Cooler Automation system at Erbil/Perdawd Power Plant,” *Tikrit Journal of Engineering Sciences.*, vol. 29, no. 3, pp. 1-14, 2022, <https://doi.org/10.25130/tjes.29.3.1>
 6. Novel 77 GHz MEMS Based Rotman Lens (in process)
 7. High Performance Continious Ground 77 GHz Single Pole Triple Throw (SP3T) MEMS Switch (in process)
 8. MEMS based 77 GHz Microstrip Patch Antenna Array (in process)
 9. A. Sinjari, S. Chowdhury, “MEMS Automotive Collision Avoidence Radar Beamformer”, in *Proc. of International Symposium on Circuits and Systems,ISCAS 2008*, 18-21 May 2008, pp. 2086 – 2089, Seattle, Washington.
 10. A. Sinjari, S. Chowdhury, “Design of a PZT-based MEMS Rotman lens”, in *Proc. of Canadian Conference on Electrical and Computer Engineering (CCECE 2008)*, 4-7 May 2008, pp. 1121-1124, Niagara falls, Ontario.
 11. A. Sinjari, S. Chowdhury, “A Single-Pole-Triple-Throw (SP3T) MEMS RF Switch for 24 GHz Short Range Radar”, in *IEEE INTERNATIONAL CONFERENCE on ELECTRO/INFORMATION TECHNOLOGY*, 7-9 June 2009, Windsor, Ontario.
 12. A. Sinjari, S. Chowdhury, “High Performance 77 GHz Single Pole Triple Throw (SP3T) MEMS Switch”, in *Joint conference IEEE Toulouse France NEWCAS-TAISA '09*, June 28-July 01 2009, Toulouse, France.
 13. A. Sinjari, S. Chowdhury, “MEMS sensors in automotive collision avoidende systems”, in *Ontario centre of excellence*, Special poster presentation, May 9 2008, Toronto, Ontario.

14. A. Sinjari, S. Chowdhury, “MEMS sensors for an integrated active vehicle safety systems (IAVSS)”, in *North American international auto show (NAIAS)*, Special poster presentation, Jan16-172008, Detroit, Michigan

EXPERIENCE:

I. ACADEMIC

University of Salahuddin

09/2012-Present

Position: Lecturer

Supervised and graduated master candidates in different fields

Courses taught:

- Computer architecture and Microprocessors
- Supervision of few Master students in the areas of PLC, automation, solar and FPGA, and graduate students in PLC and automation projects
- PLC and Automation (circuits and systems)
- Microelectromechanical systems (MEMS)

University of Windsor (Ontario, Canada)

01/2006- 08/2010 Research assistant

Teaching assistant in the following courses: MEMS, Automotive, Electrical circuits I & II, Electronics I & II, and special topics in MEMS.

Surman Technical Institute

02/1994-01/1996

Position: Lecturer

Courses taught:

- Computer and data base programming
- Circuit analysis
- Electronics I & II

University of Salahuddin

03/1993-12/1993

Position: Lecturer

Courses taught:

- Microprocessor and assembly language programming
- Circuits I & II
- Electronics I & II

I. Professional Training:

Advanced Robot Programming Controller (KRC2), part 2, Augsburg, Germany

Field bus Technologies Bus systems (KRC2), Augsburg, Germany
 Programming Methodology (KRC2), Augsburg, Germany
 KUKA robot electrical maintenance (KRC1), MI, USA
 KUKA robot electrical maintenance (KRC2), MI, USA
 KUKA robot programming (KRC2), MI, USA
 KUKA robot advanced programming (KRC2), MI, USA
 KUKA robot mechanical maintenance, MI, USA
 Fanuc robot RJ3, RJ3iB controller spot tool operation and programming, MI, USA
 Fanuc robot RJ3ib electrical maintenance, MI, USA
 Fanuc robot RJ3, RJ3iB controller pallet tool operation and programming, MI, USA
 A/AD Kawasaki Robot Controllers (operations and programming), (Wixom, MI)
 S5 maintenance, introductory and advance courses, (Mississauga, ON.)
 MRC programming and operation (Yaskawa Motoman, Mississauga ON.)
 MRC advanced programming (Yaskawa Motoman, Mississauga ON.)
 S4 paint programming (ABB robotics, Auburn Hills, MI.)
 ABB advanced programming (ABB robotics, Auburn Hills, MI.)
 PLC Advance course in (Allen-Bradley, Siemens)
 Introduction to PLC course St. Clair College (Windsor, Ontario)

II. Industrial Experience

1. Shingali Company 02/2006-present (ELECTRICAL ENGINEER)

Design and engineering service to automotive manufacturers (independent consultant)

2. POWER LASERS (Kitchener, ON, Pioneer, Ohio) 03/2005-01/2006 (ELECTRICAL ENGINEER)

Design and engineering service to the application of CO₂ laser on material welding.

3. KUKA ROBOTICS (Detroit, Michigan) 12/2003-01/2005 (ELECTRICAL ENGINEER)

Upgrading, troubleshooting, and installing of Kuka robots for ((spot, Meg, stud) welding, dispensing and material handling, vision) applications.

4. NARMCO GROUP (JFK systems Inc.) (Windsor, ON) 7/1998-10/2003 (ROBOTIC AUTOMATION ENG.)

Programming, troubleshooting and upgrading of robotic automated lines:

- Robotic spot welding (multi fixture cells) controlled by device net, slc 500, using medar 3005i and robotron welders (Fanuc robots).
- Robotic Meg welding (multi robot cells) controlled by micrologix, Mitsubishi plc, using moto arc 450 welders (Motoman and Fanuc arc mate robots).

- Automated paint lines (conveyor controlled and used as a seventh axis) controlled by slc 500, using ABB robots.
- Automated tandem press lines using PLC5 as MCP and SLC 500 for individual presses, (Fanuc and Kawasaki robots).
- Multi stage transfers controlled by Siemens and SLC 500.

**5. AFRIDI DESIGN (Windsor, ON)
(ELECTRICAL ENGINEER)**

2/1997-6/1998

Design and Engineering service to automotive engine manufacturers and their machine tool suppliers.

**6. DIANA COMPANY
(ELECTRICAL ENGINEER)**

11/1990-12/1995

Serviced control boards, industrial automated systems, induction motors, and HV transformers.

**7. Self employed
(ELECTRICAL ENGINEER)**

6/1987-10/1990

Engineering design and service for control boards, central heating and cooling systems, induction and DC motors, HV transformers, generators

**8. VOLUNTEER EXPERIENCE
UNITED NATIONS (UNHCR)**

1996

Software Engineer

Data entry using FoxPro and access programs

III. OTHER TECHNICAL EXPERTISE

PLC	Allen-Bradley: RSLOGIX5000, Siemens step 7, PLC-5, SLC500, Micrologix, Controllogix, and Mitsubishi.
Plant Floor exp.	Mercedes, General Motors, Ford, Daimler-Chrysler, Toyota, Mitsubishi, Mazda.
HMI	Factory talk view studio and Allen-Bradley Panel View family
Serial Comms:	RS-232/485/DH+
Software packages	Siemens step 7, RSLogix 5000, Panel builder 32, RSLogix 500, RSLinx, RSLogix 5, S5.
Engineering Tools	AutoCAD 2021, HFSS, ADS, Coventorware, IntelliSuite, Matlab
Operating Systems	Windows 10, OS, Karel, Top hot, KR
Industrial Networks	Data Highway, Device Net, interbus, profibus.
Instrumentation	Temperature, Pressure, Flow, Thermocouples
Valves	air, hydraulic
Robotics	KUKA, Fanuc, ABB, Kawasaki, Motoman
Welding	(Meg, spot, stud) welding (Medar, Robotron, Emhart, Moto-arc controllers)
Computer Skills	HFSS, ADS, Coventorware, IntelliSuite, Matlab, AutoCAD, Windows 10,

Microsoft Office